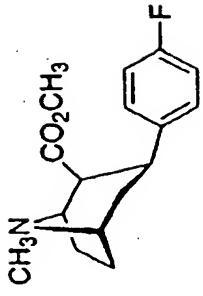
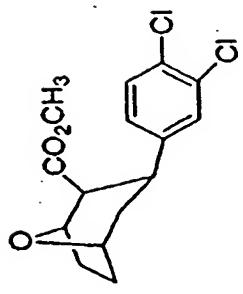


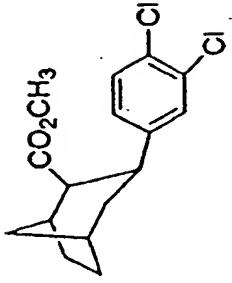
Cocaine



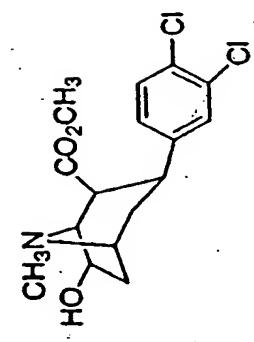
WIN 35,428



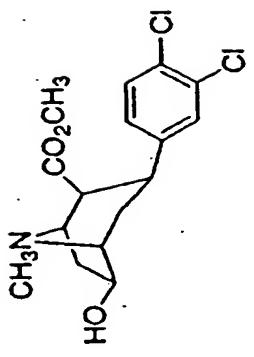
2β -Carbamethoxy- 3β -(3,4-dichlorophenyl)-
8-oxabicyclo[3.2.1]octane



2β -Carbamethoxy- 3β -(3,4-dichlorophenyl)-
bicyclo[3.2.1]octane

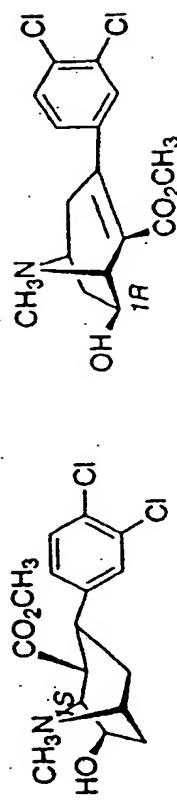


2β -Carbamethoxy- 3β -(3,4-dichlorophenyl)-
 8β -hydroxy-8-azabicyclo[3.2.1]octane



2β -Carbamethoxy- 3β -(3,4-dichlorophenyl)-
 6β -hydroxy-8-methyl-8-azabicyclo[3.2.1]octane

Figure 1. Structures of Lead Bicyclo[3.2.1]octanes



(1S)-18a



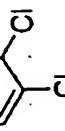
(1R)-18a

In solution



(1R)-18a

In solid state

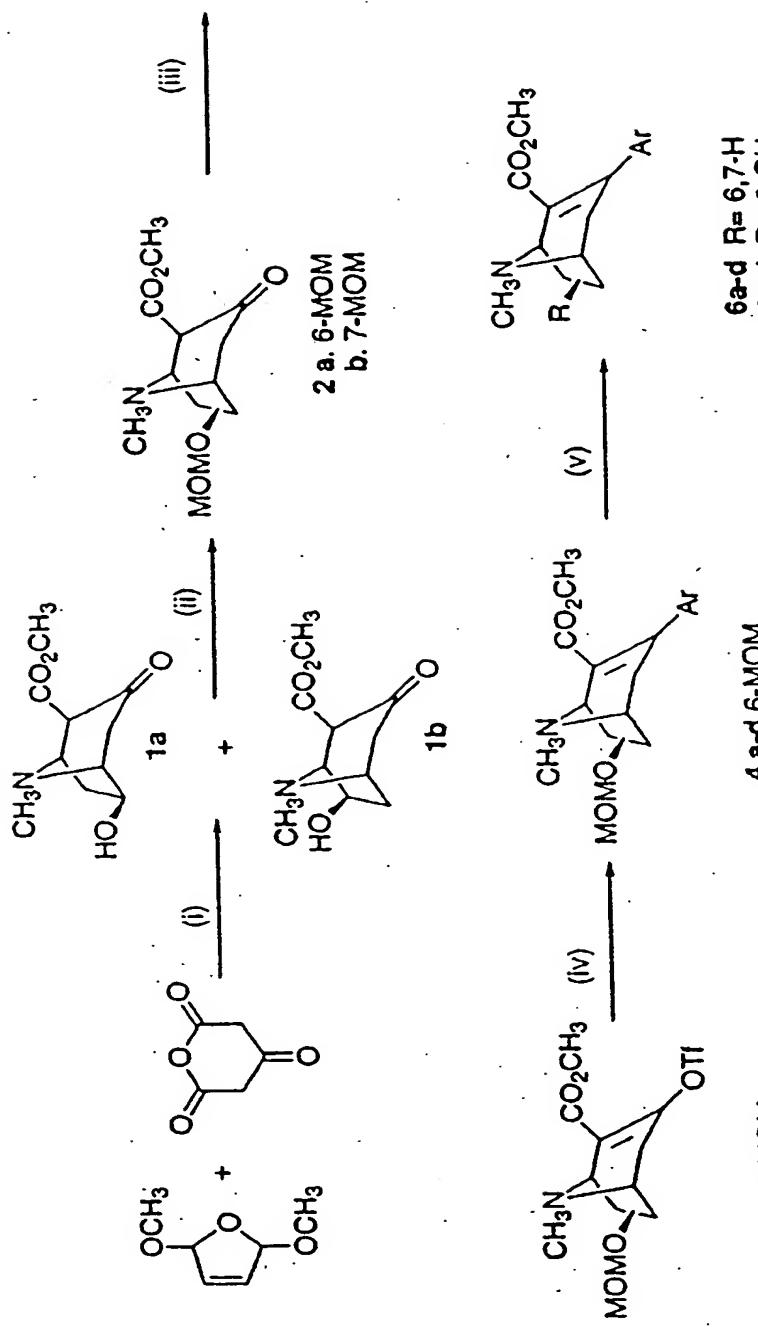


(1R)-18a

Figure 2. Absolute Configurations of (1R)-8a, (1R)-18a, (1S)-18a

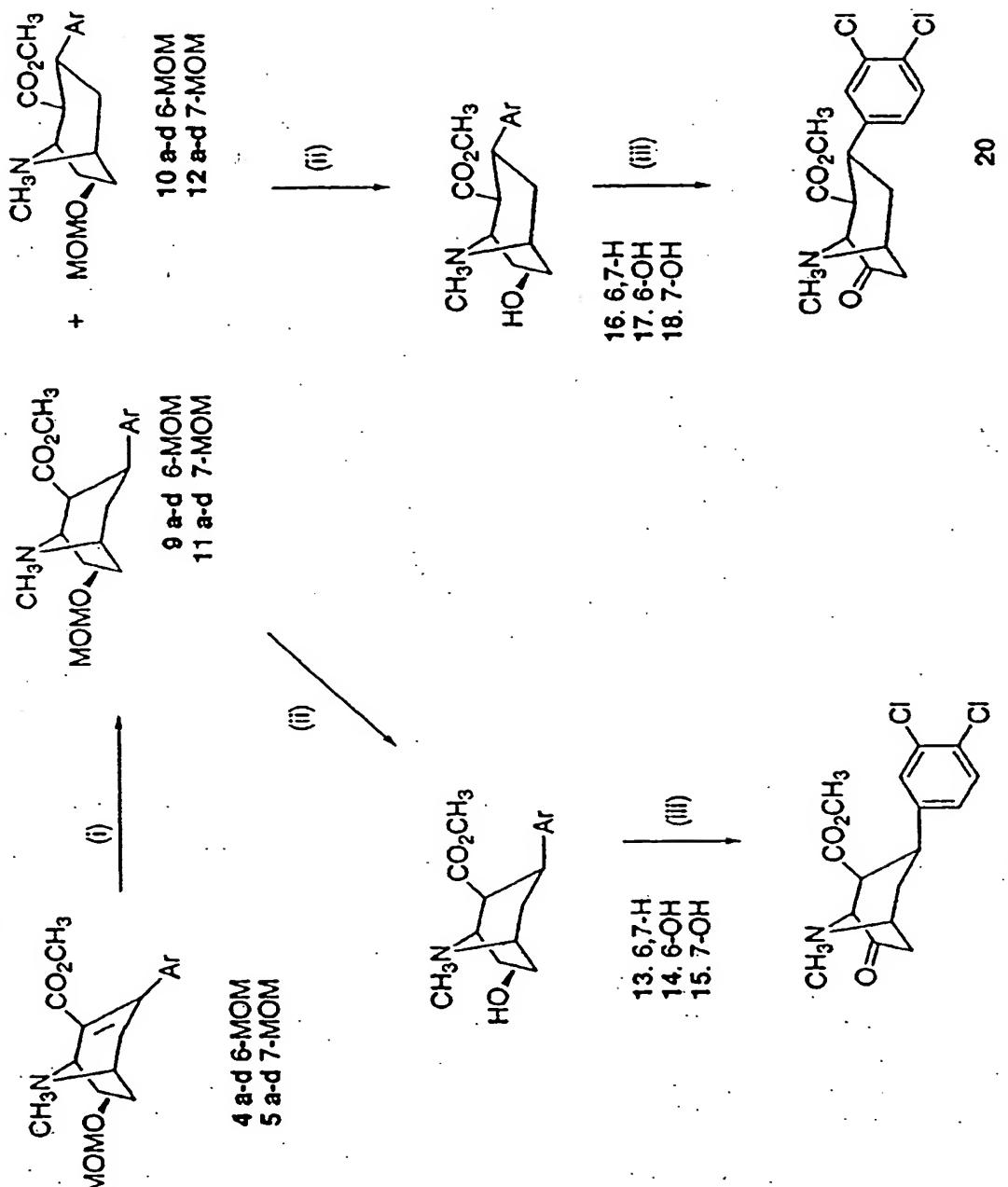
Figure 3

Scheme 1. Synthetic Route to 2,3-Unsaturated Tropanes^a



^a Reagents: (i) H_2NCH_3 ; (ii) $\text{CH}_2(\text{OCH}_3)_2$, pTSA; (iii) $\text{NaN}(\text{TMS})_2$, PhNTf_2 ; (iv) $\text{Pd}_2(\text{dba})_3$, $\text{ArB}(\text{OH})_2$; (v) TMSBr .

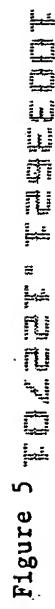
Figure 4

Scheme 2. Synthetic Route to Bridge Oxygenated Tropanes^a

^a Reagents: (i) SmI_2 ; (ii) $\text{TMSBr}, \text{CH}_2\text{Cl}_2$; (iii) $\text{N-CH}_3\text{-morpholine-N-oxide}$, $\text{tetra-}n\text{-propylammoniumperuthenate}$.

19

20

Figure 5  Figure 5 shows the synthetic route to bridge oxygenated 2-keto tropanes.

Scheme 3. Synthetic Route to Bridge Oxygenated 2-Keto Tropanes^a

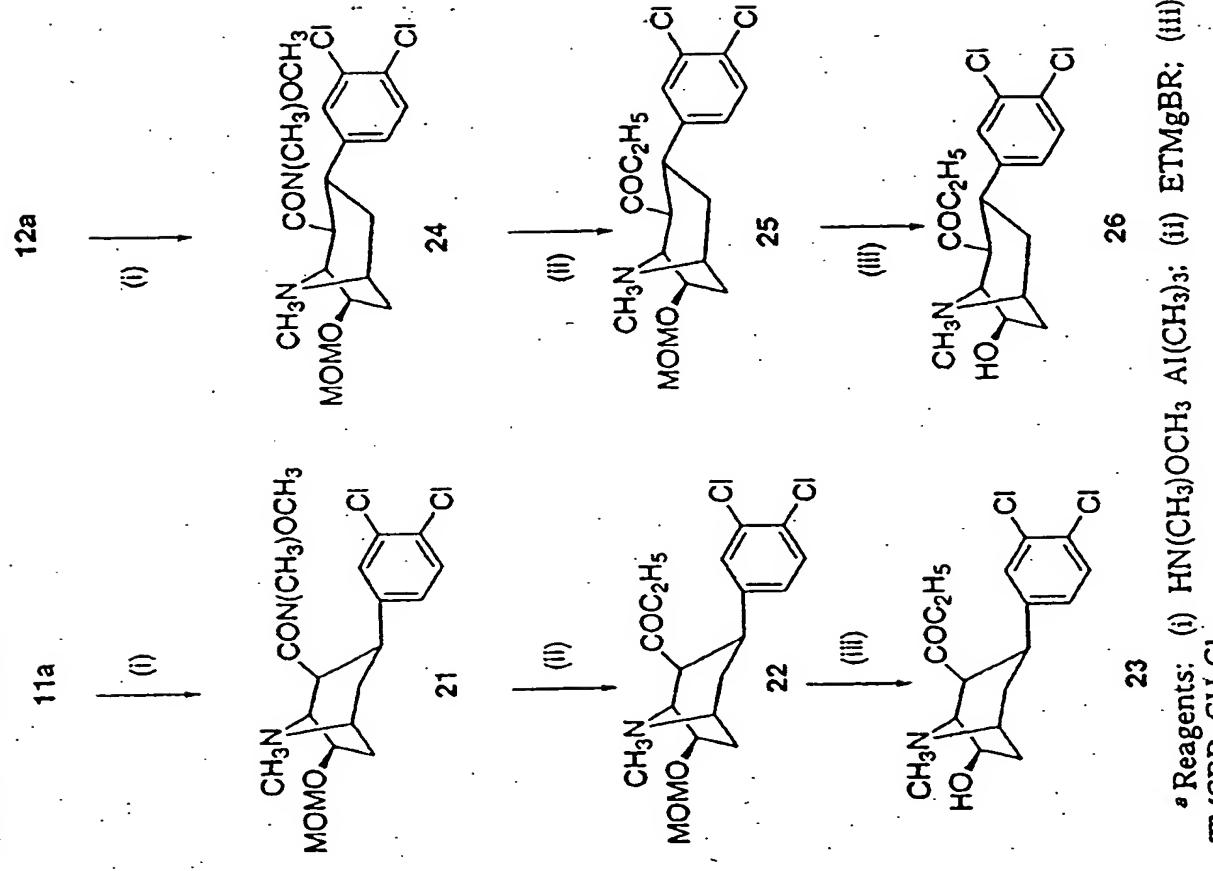


Figure 6

Scheme 4. Resolution of 8A, 15A, and 18A^a

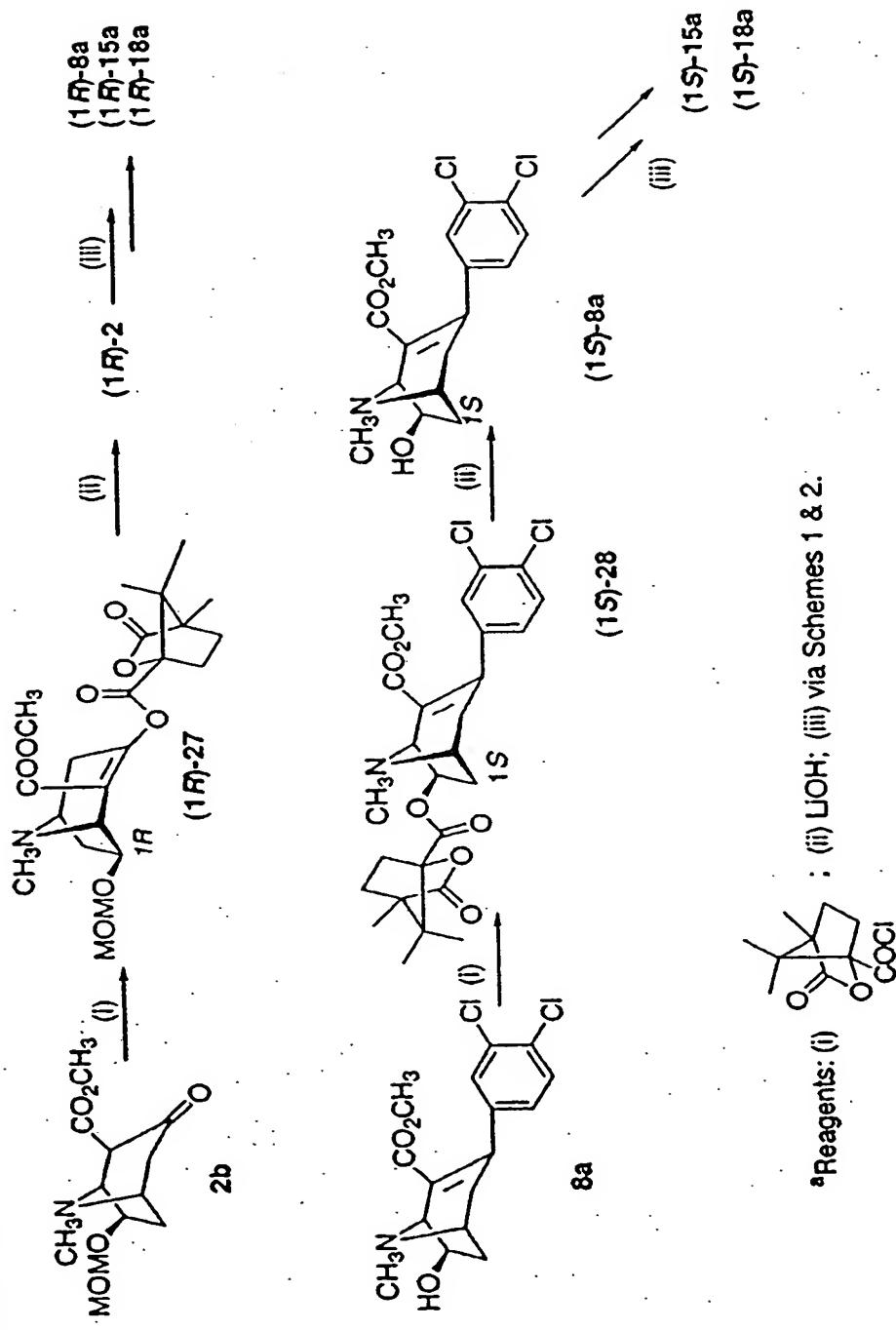
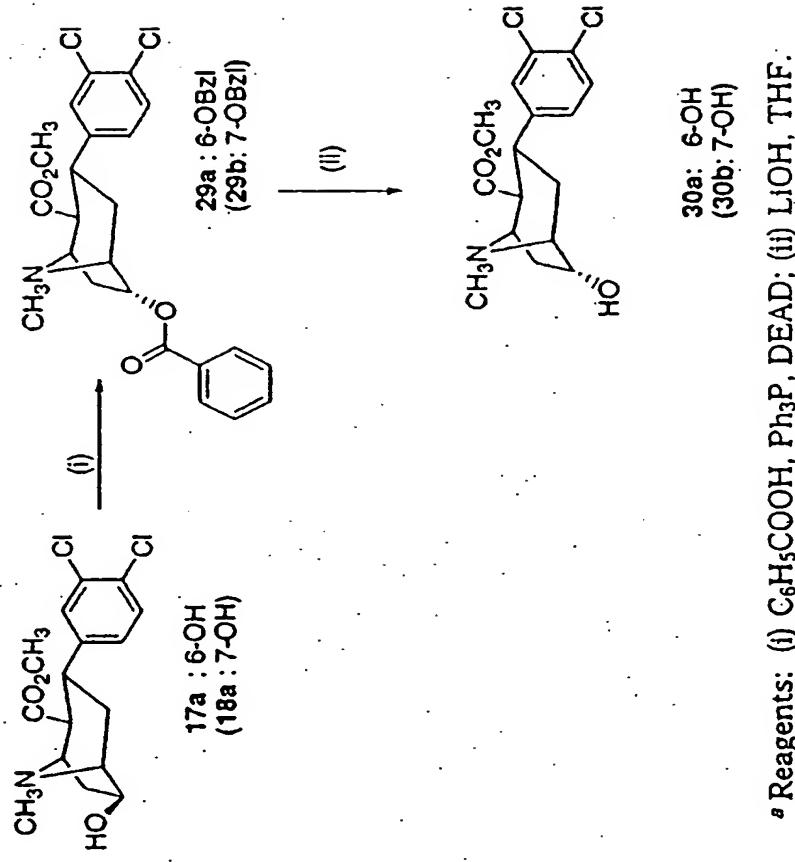


Figure 7

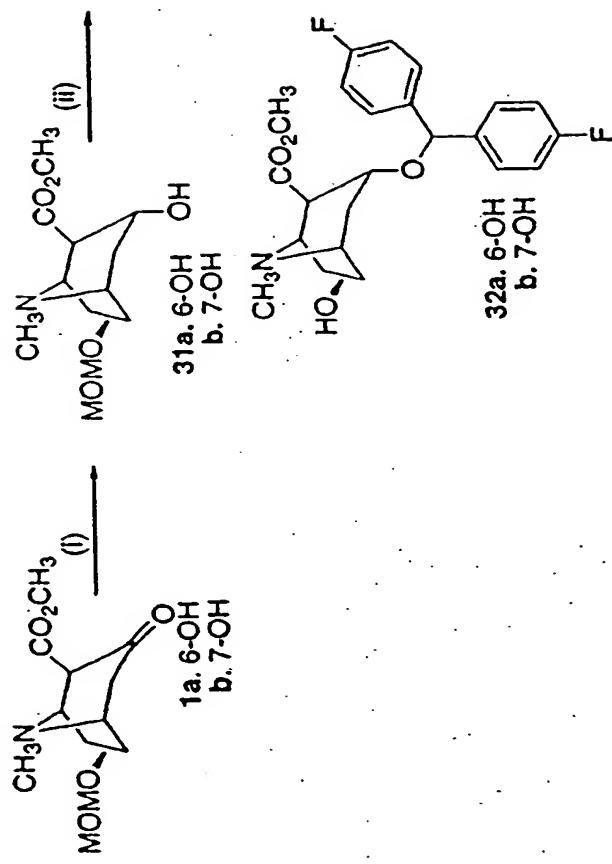
Scheme 5. Inversion at C6 and C7^a



^a Reagents: (I) C₆H₅COOH, Ph₃P, DEAD; (II) LiOH, THF.

Figure 8

Scheme 6. Synthesis of Diarylmethoxy Tropanes^a



^a Reagents: (I) NaBH_4 ; (II) 4,4'-difluorobenzhydryl, *pTSA*.